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Abstract: Neoliberalization of the water sector in Lima, Peru, is analyzed using an innovative conceptual framework with three interrelated dimensions: techno-environmental improvements, the monetization of water services and the search for political legitimacy. Application of this conceptual framework to the recent reforms of the public water services of Lima, a city historically fraught with social inequalities and water management problems, shows that there have been two distinctive phases: firstly, emphasis on techno-environmental improvements and monetization in the 1990s (when the privatization of the local water utility was the ultimate, but unfulfilled, goal); secondly, a focus on monetization and legitimization in the 2000s (marked by more flexible mechanisms of private sector involvement). Field work in Lima reveals that positive results from increased investment in water services have been undermined by the discriminatory and short-term basis of neoliberalization of water. Problems of debt financing, neglect of equity of access to services and weak environmental sustainability threaten the long-term future.

Key words: Neoliberalism, nature neoliberalization, water conflicts, public utility, political geography, environmental justice, resource geography

INTRODUCTION

Lima, the capital of Peru, has a recent history marked by high rates of urban growth and intense landscape transformation. Since the mid-20th century, the city has experienced a significant in-flow of migrants from the provinces and, as a result, the population has increased from 645,000 in 1940 to more than nine million in 2010 (INEI, 2010). Even before this massive internal migration, Lima failed to provide safe water services to all its residents, particularly those with low incomes. According to the most recent assessment, around 8.5% of the population continues to rely on water trucks, 3.9% on public fountains and 4.3% extract water from boreholes or watercourses; in many parts of the city, the piped water service is provided for only a few hours every day and around 90% of the sewage remains untreated (INEI, 2007).

Contemporary water problems in Lima are in part the result of uncontrolled urban expansion and a persistent lack of investment, but also need to be considered in a broader context of state reforms and insertion of Peru into the global economy. In the last two decades, the country has become one of the main 'laboratories' in Latin America for application of neoliberal policies, which did not spare the public water services of Lima. The reconfiguration of the local water company (SEDAPAL - Lima's Drinking Water and Sewerage Service) and the introduction of a new regulatory framework (under the coordination of SUNASS - National Sanitation Service Superintendence) constitute clear evidence of the expansion of neoliberalism.

Using Lima as a relevant case study, it will be demonstrated below that water neoliberalization comprises a multifaceted combination of rhetorical constructions, disguised interests, technocratic rationality and, at best, circumstantial improvements. The accomplishments and contradictions of the neoliberalization of water in Lima will be considered as part of Latin American state reforms and expansion of market-based environmental policies. The Peruvian experience shows commonalities, but also differences, with other areas of the sub-continent where the main driving force was concession of public services to multinational companies. Water neoliberalization has been more noticeable in countries like Bolivia (in Cochabamba and La Paz/El Alto), Brazil (in Manaus, Campo Grande and Rio de Janeiro) and Argentina (in Buenos Aires and Santa Fé), than in Peru

where transfer of water management to the private sector has been more sporadic and localized (Hall & Lobina, 2007). While multinational water companies have started to pull out of other countries because of low or falling profits and sustained public opposition, in Peru the neoliberalization of the water sector has endured and even escalated through the adoption of a variety of business models. The neoliberalization of water in Peru has lasted longer and has entailed more sophisticated approaches than in most other South American countries yet there has been little discussion of these relatively peaceful innovations in the international literature. The present analysis will address this gap in analysis of the fluid and incremental agenda of water reforms in Lima. An analytical framework able to capture the dynamic and politicized basis of the neoliberalization of water services will be introduced.

THE THREE INTERRELATED DIMENSIONS OF THE NEOLIBERALIZATION OF WATER

Over the last decades, the term neoliberalism has attracted significant political attention and influenced important changes in the structure and operation of governments around the world. Neoliberalism is not an easy concept to define but can be best understood as the combination of free-market libertarianism and neoconservative moral authoritarianism (Peck, 2004). Neoliberal strategies, according to the last author, have entailed both a conservative response to fiscal and debt crises and produced an increase financialization and corporate globalization. Neoliberal capitalism has advanced with the destruction and reconstruction of previous socioeconomic and political arrangements, as an ideological construct that evolves through tensions and conflicts between various economic and non-economic interests (Brenner & Theodore, 2002). This dynamic process of change has had a far-reaching penetration, even at the micro-scale of neighborhoods and non-economic activities (Castree, 2010), with fewer and fewer locations and sectors across the planet immune to its effects (Heynen & Perkins, 2005). What is relevant for the purpose of our analysis is that the expansion of neoliberalization has also effected important adjustments in the interconnections and interdependencies between nature and society (McCarthy & Prudham, 2004).

Although the connections between nature and neoliberalism may not be always immediately evident, there exists a ‘contingent necessity’ between the introduction of contemporary approaches to the management of socio-ecological systems and the neoliberalization of socioeconomic relations. The neoliberalization of nature is an intricate phenomenon that combines market pressures on natural resources and the re-regulation of environmental management according to pro-market goals and prescriptions. This contingent necessity is manifested through the articulation of several causal chains, including changes in resource ownership, new sources of public service financing, and a growing commodification of environmental protection. Yet the synergies between the socio-ecological and politico-economic dimensions impacted by neoliberalism, and the shared agency between nature and society, have rarely received sufficient consideration (Bakker, 2010).

In a review of the rapidly increasing number of publications on nature and neoliberalism, Castree (2008a, b) identifies a series of analytical traps, such as failure to address its ecological dimension, the conflation of different types of neoliberal practices, and excessive focus on case specific conditions. Aiming to overcome those deficiencies, Bakker (2009) suggests a typology based on a series of ‘targets’ and ‘tactics’ of the neoliberalization of nature. In this case, a matrix of institutional changes, governance and (socio-natural) actors are presented as a way of encapsulating processes that unfold at different scales and according to specific spatiotemporal conditions (an approach that was later supported by Castree, 2009). An additional ‘descriptive typology’ is advanced by Bakker (2010) to deal

with the capture by neoliberalism of primary commodities, active bodies and ecosystem services.

The conversation between Karen Bakker and Noel Castree has certainly enriched the debate about the neoliberalization of nature and helped others to navigate through this fast-growing literature. Castree is specifically concerned about the over-theorization of not too different processes and Bakker provides an important reassessment of the artificial boundaries between nature and society and of the contingency of neoliberalism in a more than neoliberal world. Nonetheless, in many regards this sequence of papers still leaves unresolved important questions about the neoliberalization of nature, especially on how to interpret concrete, unfolding experiences on the ground and the future prospects of socio-ecological systems affected by neoliberalism. There seems to be an excessive systematization of the constitutive elements of nature neoliberalization and less attention given to explaining how these phenomena emerge and evolve. More importantly, their effort to shed light on the assessment of nature neoliberalization ended up obliterating the explanatory value of their suggested nomenclature. These two authors introduce a reasonably comprehensive analysis of drivers and outcomes, without sufficient elaboration of the internal dimensions of the neoliberalization of nature and, crucially, its interconnections with neoliberal pressures more generally.

A related problem in this same literature is the proliferation of multiple framing concepts as an attempt to condense in a few rules the remarkable complexity of the neoliberalization of nature. For example, Bakker (2005) describes the neoliberalization of water as the product of three overlapping forces, namely commodification (market exchange of water processes previously outside the sphere of the market), commercialization (adoption of commercial principles and methods) and privatization (changes in resource and utility ownership). Previously, Bakker (2002) had made use of the concept of marketization [‘*mercantilización*’ in Spanish] as the adoption of markets or market-stimulating decision-making techniques, as well as participation of private companies and private capital in water management. Likewise, Smith (2004) differentiates between privatization (transfer of ownership) and corporatization (service delivery in which the state retains control but also delegates to private firms the management of public services). Public service ‘delegation’ is also increasingly seen as part of the new orthodoxy of public water services and as a ‘third way’ alternative that is less controversial than full divestiture of public utilities (UNESCO, 2004). Moreover, Budds & McGranahan (2003) consider that privatization is a generic term that can be used also in reference to private sector investment (concessions schemes such as BOT – build, operate and transfer) and public-private partnerships (PPPs), therefore blurring the boundaries between privatization, corporatization and commercialization. To make matters even more complicated, Smith (2007) depicts the neoliberalization of nature as the convergence of commodification, marketization and financialization.

A more dynamic, and geographically sound, conceptualization of the neoliberalization of nature, and of water in particular, seems to be still missing. So far, most authors have placed emphasis on specific institutional changes and business-like transactions, but not enough on the multidimensional basis and constantly evolving practices of water neoliberalization. The main limitation of the suggested typologies and framing concepts is a focus on the procedural aspects of the advance of neoliberalism over nature but the reluctance to explain the more strategic and adaptive attributes that have secured the persistence, often in disguised ways, of neoliberalizing agendas. The idiosyncratic manifestations of those practices call for a more comprehensive analytical framework that is able to account for the flexibility and heuristic properties of water neoliberalization. It is crucial to realize that the neoliberalization of nature emerged as both a response to the ecological degradation and as an opportunity to forge new mechanisms of capital accumulation through adjustments in

environmental policies and public services. These are complex, variegated processes that are structured by historico-geographical circumstances (Cocq & McDonald, 2010), as well as by the socio-ecological (extra-economic) properties of water, which had earlier incited Bakker (2004) to famously describe water as an 'uncooperative commodity'.

Instead of concentrating on isolated aspects and specific framing concepts, as mentioned above, the totality of the relations between society, nature and the state under the neoliberal waves of accumulation should be addressed. Water neoliberalization is more than the simple advance of commodifying mechanisms and market-friendly procedures, because also it entails a series of deeply interrelated adjustments in technical and political spheres (Larner & Laurie, 2010). Technical, economic and political adjustments are the central dimensions (or meta-attributes) of water neoliberalization and their fluid interplay explains the insertion of water use and conservation into market-based transactions. By focusing on these three interrelated dimensions, it is easier to understand the evolution of water neoliberalization as a succession of strategies which emphasize different institutional adjustments according to demands and constraints. It means that the differences between the processes of water neoliberalization occurring in countries, cities and locations around the world derive from specific combination of driving-forces that constitute each one of these three dimensions. This conceptual construct facilitates a fresh look at political reaction and popular resistance to the imposition of neoliberalized mechanisms, given that the antagonism to the neoliberalization of nature also evolves according to changes in policy priorities taking place in time and space.

In broad terms, the experience in the last three decades has been marked by a succession of moments each respectively associated with one prevailing dimension. In other words, the three meta-attributes (dimensions) are always present in any process of water neoliberalization, but one dimension seems to prevail in a given historical period according to concrete politico-geographical circumstances. Contrary to other descriptions (e.g. Smith, 2004; Van Elteren, 2009; Walsh, 2011), the first phase of the neoliberalization of water, already in the 1980s, was primarily concerned with reducing the negative externalities generated during the post-World War II period of national development informed by Keynesian economics. Previous accounts of neoliberalization of water overlooked the fact that the agenda of reforms initially focused on paving the road for the subsequent adoption of market-friendly management solutions. In that sense, the introduction of new water policies and technical adjustments represented an early, but necessary, stage of introducing more flexible water management and the creation of a greater space for non-governmental players (private companies, but also NGOS and civil society organizations).

This first phase of water neoliberalization was, therefore, centered on a *techno-environmental* dimension and encompassed a set of measures designed to cope with operational inefficiencies and environmental impacts of government interventions in the previous decades. The recommendations adopted at the United Nations Water Conference in Mar del Plata, Argentina, in 1977, which were later reinforced during the UN International Drinking Water Supply and Sanitation Decade between 1981-1990 were evidence of the new direction water management policies were taking. The official documents of the Conference introduced pivotal concepts that gradually altered water management in the subsequent years (i.e. calls for a holistic catchment assessments, pollution prevention, water balance models, public participation in decision-making, and improvements in monitoring and data management). Most countries responded by passing legislation that stipulated Environmental Impact Assessments and similar regulatory requirements. In particular, the doctrine of integrated water resources management (IWRM) became a crucial influence on new policies and legislation (Ioris, 2009).

Efforts in terms of techno-environmental improvements continued to inspire the formulation of public policies after their introduction in the 1980s, but it was not until the 1990s that the neoliberalization of water began to move more aggressively into arenas formerly inaccessible to market-like transactions (Sangameswaran, 2009). The emphasis shifted from technical matters to a more uncompromising economic rationality in an attempt to forge novel business opportunities in the water industry (Goldman, 2007). The language changed from a 'focus on mitigating environmental impacts' into the internalization of 'environmental externalities' and the removal of 'state failures' (Shaw, 2005). That was the tone of the 1992 Dublin Statement on Water and Sustainable Development, which asserted that water is a "finite and vulnerable resource" that "has an economic value" and "should be recognized as an economic good." In a period when the state was blamed for the breakdown of the water services (Schwartz, 2009), the so-called 'Dublin Principles' offered a logical and, also very expedient, justification for further market-based relations around water, which happened chiefly through a shift from water supply towards demand management and higher levels of economic and technical efficiency.

This more explicit economic dimension of water management corresponds to the *monetization* of water, that is, the attachment of monetary value to water and the handling of water as an economic resource amenable to market transactions and 'rational choice' theory. The monetization of water presupposes the standardization and commensurability of socio-ecological values through the use of pricing achieved primarily via the introduction of water permits and charges, as well as use of cost-benefit analysis to underpin responses to water problems. The monetary valuation of water plays a key normative role in environmental governance because it provides markets with the information needed to pursue commercial-like relations (Gizelis & Wooden, 2010; Ioris, 2008; Robertson, 2007). Both techno-environmental adjustments and the monetization of water were strongly encouraged by multilateral agencies, such as the World Bank and the World Water Council. It was particularly through imposed structural adjustment plans that the privatization of water utilities and the adoption of market-friendly regulation were implemented around the world (Ahlers, 2010).

At the same time, the spreading of water neoliberalization was lubricated by hundreds of international summits, such as the historic World Water Forum, in The Hague, in 2000. Nonetheless, insistence on the role of the private sector in water supply and environmental management also faced growing resistance in the Global South. Disastrous cases of utility privatization – such as in Bolivia, Argentina and South Africa, where operational contracts were seen to favor dishonestly multinational corporations at the expense of higher tariffs, corruption and the cancellation of service to many of the poorest households – prompted a worldwide reaction against the ideology of water neoliberalization (Holland, 2005). There was a growing gap between the promises of the private participation model (advocated mainly by the World Bank) and the reality of the water services in the countries that received loans and collaborative funds. Critical problems included failure to find additional financial sources, failure to maintain the quality of operation, and failure to expand household connections (Hall & Lobina, 2010).

Acceptance of the orthodox neoliberal formula became gradually more difficult and, as a result, the agenda of water neoliberalization was forced to incorporate concepts such as adaptive management, transition management, and multi-stakeholder participation. Recognizing that the early neoliberal policies were not effective in serving low-income water users, by the late 1990s, a pro-poor rhetoric emerged as a response to increasing political unrest (Castro, 2007). In addition, the United Nations declared the period 2005-2015 as the "International Decade for Action – Water for Life", which emphasized further water management issues such as the importance of culture, race and gender. Therefore, the third

moment of water neoliberalization (particularly since the Kyoto Forum in 2003) was centered on the *legitimization* of a new regulation and service provision, but without any significant departure from the ultimate aims of capital accumulation through environmental management and service provision.

It is necessary to observe that the above sequence in the evolution of the neoliberalization of water is not identical, in the same order, to all countries, cities and locations. The case below will show that in Peru the whole process started only in the 1990s and the three interrelated dimensions evolved largely in parallel due to pressing demands. In effect, the manifestation of each dimension of water neoliberalization did not happen simultaneously around the world, but necessarily followed specific socio-ecological and political circumstances. The outcome of the neoliberalization of water has depended on a tension between capital accumulation goals and extra-economic reactions offered by social and ecological systems. In many cases, because of political opposition, the legitimization effort has had to come together with economic and techno-environmental adjustments. In other circumstances, the emphasis may have been restricted to those techno-environmental improvements that are needed by other economic sectors, rather than creation of new avenues of accumulation directly related to water management.

Despite the idiosyncratic features of individual experiences, there are always important synergies between those three dimensions, techno-environmental, economic and political legitimacy, which define the level of success of water neoliberalization programs. For instance, techno-environmental initiatives are required to make water more easily available to monetized relations. Similarly, the acceptability of market-like responses requires the production of tangible techno-environmental results, which together help to reinforce political legitimization. Table 1 summarizes the main aspects and repercussions of three dimensions of water neoliberalization

Table 1. Representation of the three interrelated dimensions (meta-attributes) of water neoliberalization reforms

Characteristics		Dimensions		
		Techno-environmental adjustments	Monetization of water services	Legitimization of reforms
Key concepts associated with each dimension (from the scholarly literature)		Integrated, sustainable water resource management and/or catchment management	Commodification, privatization, commercialization, marketization, financialization	Governance, transition management, stakeholder and public participation
Milestone conferences		UN Water Conference Mar del Plata, 1977	International Conference on Water and the Environment, Dublin, 1992	Third World Water Forum, Kyoto, 2003
Paradigmatic publications		Integrated water management, edited by Mitchell (1990)	World Bank Policy Document on Water Resources Management (1993)	UN Millennium Declaration (2000)
	Global	Expertise transfer	Economic value of water resources	Global cooperation
	National	Spatial repercussions	Re-regulation of the role of the state	Public participation; stakeholder consultation

	Local	Environmental impact mitigation, utility reorganization	Full cost recovery, payment for ecosystem services	Communication campaigns, conflict resolution

The main advantage of this analytical representation is to demonstrate clearly the dynamic and contingent evolution of the neoliberalization of water as a multidimensional process that moves forward according to particular historico-geographical circumstances. While for some authors the neoliberalization of water is narrowly associated with the monetization dimension (i.e. utility privatization and the withdrawal of the state from water regulation), according to the suggested conceptualization the divestiture of public water utilities constitutes only one moment of the overall neoliberalizing policies. In other words, instead of focusing on one specific framing category, the proposed conceptual model captures the necessary interplay between the structuring dimensions. In this way, it accounts for the appropriation of public engagement and environmental restoration by policies aimed at developing new routes of capital accumulation through the control of water. It also helps to elucidate why a significant number of critical reactions to the neoliberalization of water have been systematically absorbed by the official mechanisms of governance and conflict resolution. Furthermore, the interrelation between meta-attributes facilitates perception of the totality of water neoliberalization and the specific alterations needed to sustain the process of institutional reforms. Making use of this analytical approach in analyzing the expansion of urban water services in Lima, the case study demonstrates how these three dimensions of water neoliberalization have unfolded, leaving major problems unresolved.

THE NEOLIBERALIZATION OF WATER IN LIMA

The Research Strategy

The current analysis is based on fieldwork carried out in Lima between March and June 2009 which included systematic visits and participation in public events in zones with different water problems. The research strategy consisted of an 'embedded case study', as described by Yin (1994), and started with consideration of sub-units of social action which were then scaled up to identify common patterns at larger geographical scales. Embedded case studies are particularly useful in political geographical investigation because they can be employed to study larger processes that involve many individual organizations. The study explored interests and behavioral patterns of stakeholders in various geographical locations and, as well as the institutional framework in which they operate.

Initially, the research included scoping interviews with key informants and academics involved with water regulation and urban policy-making. Based on this preliminary information, a database of public and non-governmental sectors was developed to guide further interviews, the analysis of documentation and the collection of background information. Interviewees were identified from an array of organizations that represented multiple interests in the water management sector. By mapping the various organizations, their discourse and stated aims, it was possible to compare intra- and inter-group differences and the range of alliances or disputes.

A total of 54 semi-structured interviews were then carried out and provided a broad range of opinions in favor or against the process of institutional water reforms, including local residents (23 interviewees), regulators, policy-makers and parliamentarians (10), NGO activists (8), officers, workers and managers of SEDAPAL (7) and representatives of multilateral agencies (6). Additional data were gathered through the engagement with local residents in three peripheral areas (Pachacútec, Huaycán and Villa El Salvador - see Figure

1), which was instrumental in capturing beliefs, practices and subject positions. Public events sponsored by both governmental and non-governmental entities were also attended during the fieldwork period. Special effort was made to participate in as many different types of activities as possible in order to build a solid understanding of the public debate and clashes of interest. More than 120 official documents were also consulted at SEDAPAL, SUNASS and the National Library, as well reports provided by the various organizations visited during the research. Primary field research in Lima was supplemented by analysis of media coverage of water issues including daily consultation of the main web-based newspapers.

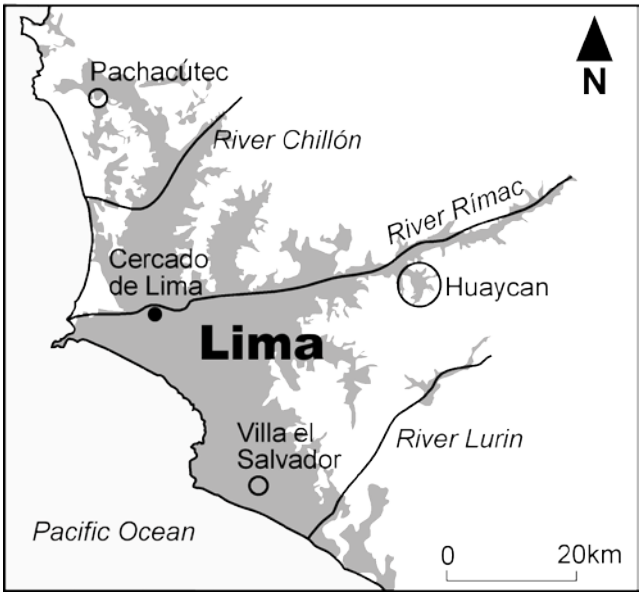

Figure 1: The metropolitan region of Lima,
three main rivers and study areas

The Introduction of Neoliberalism in Peru

The introduction of neoliberalism in Peru followed the demagogic, turbulent government of Alan García (1985-1990), which led the country into hyperinflation, generalized instability and economic depression. That dramatic process of change is vividly described in the *mémoires* of the novelist and former presidential candidate, Mario Vargas Llosa (2005), defeated in 1990 by an improvised candidate, Alberto Fujimori, who benefited from a last-minute support from Alan García. After his unexpected election, Fujimori virtually embraced Mario Vargas Llosa's neoliberal platform of economic recovery through market deregulation, state retrenchment, normalization of debt-service payments and reinsertion of Peru into the international financial community (Wise, 2003). Following the 1992 self-coup (*auto-golpe*), the regime became semi-dictatorial – including control over the congress and the judiciary (Roberts, 1995) – which was instrumental for introducing wider neoliberalization of the economy (Bebbington & Humphreys Bebbington, 2011). The eventual resort to violence and repression by the Fujimori administration seemed to confirm the early observation of Slater (1989) that democracy may not be the best political environment for capitalism in peripheral countries such as Peru.

Economic stabilization happened mainly through reduction of state expenses and extensive utility privatization (Wise, 2003), although it also created a persistent mismatch between economic results and sociopolitical demands (Gonzales de Olarte, 2005). The last years of Fujimori's administration were marked by massive corruption and mafia-like

operations carried out personally by the president and members of his cabinet (Durand, 2003). Under growing scandals, the government crumbled in 2000 and was followed by the care-taking administration of Valentín Paniagua. Re-establishment of civil liberties and formal democracy by the new regime was not followed by changes in the underlying direction of the economy. On the contrary, the neoliberal tide was resumed by President Toledo (2001-2006), whose government was marred by constant political turbulence because of its Parliamentarian minority and the adverse global economic situation (Murakami, 2008).

In 2006, in what is one of the most curious turns of contemporary Peruvian politics, Alan García, the same leader who had undertaken a histrionic confrontation with the international financial system in the 1980s and who even attempted to nationalize the banking sector, was returned to office as a neoliberal politician. The odd 'dialectics' of García(1)-Fujimori-García(2) – in the sense that the second mandate of Alan García (2006-2011) incorporated the neoliberal platform of Fujimori and blended it with his distinctive populist attitudes – only make sense in a context of patrimony, economic instability and weak political parties that have characterized the recent history of Peruvian development. During his campaign and throughout his mandate, García sustained his promise to remain faithful to the neoliberal canon (Tanaka & Vera, 2007). The economic reasoning of the new administration was bluntly revealed in a series of newspaper articles, published in October and November 2007, when the President blamed those against the neoliberal reforms for suffering from *el síndrome del perro del hortelano* (translated as 'the dog in the manger syndrome').

García criticized the fact that large areas were being used by the peasantry in what was perceived as a lost opportunity for economic growth. Instead of leaving land and resources in the hands of peasants, García called for an intensified exploitation of water, gas and timber by national and international corporations. The administration took numerous measures to put in practice the neoliberal claims made by the (recently converted) President García. Furthermore, in December 2007, after the ratification of a Free Trade Agreement with the USA, the Congress delegated to the executive – something that has not been uncommon in Peru – the fast-track authority to legislate for six months over matters related to that agreement. That was García's 'Eighteenth Brumaire' with 102 decrees issued unilaterally by the president, including Decree 1081 that replaced the previous water law with further legal reassurances for the operation of private sector investors (La República, 2008).

The First Moment of Water Neoliberalization: Techno-environmental and Monetization Dimensions

For many decades, from the interwar period to the neoliberal phase (under Fujimori, Toledo and García), successive governments tried to manage the fast rate of metropolitan expansion and the spread of the *barriadas* or *pueblos jóvenes*, as the low-income, marginalized neighborhoods of Lima are known. However, the effort largely failed to stem chaotic growth of the city to the north, the south and the east, especially along the main roads and river valleys. They also did not prevent the consolidation of an overarching pattern of deprivation and uneven development between central and peripheral neighborhoods.

An important aspect of the pressing urban problems of Lima in the 20th century was the delay in investments in public water services, which was aggravated by an escalating water demand, inadequate planning and the deterioration of the infrastructure. Because of many decades of mismanagement of the sector, after taking office as president, Fujimori inherited a city on the brink of a water crisis (IMP, 1989). That grim situation was ultimately the legacy of the García administration in the 1980s which compromised the managerial and planning ability of government agencies. The water utility of Lima (SEDAPAL) had been plagued by unceasing political interference and was frequently criticized by its distant,

unresponsive relationship with the population (Caravedo, 1986). More importantly, the need to reorganize the public water services coincided – and had a contingent relationship – with the introduction of pro-market institutions and the creation of new avenues for capital accumulation under Fujimori.

As a result, from 1990, the water industry of Lima became a privileged arena for testing the technical, economic and political dimensions of water neoliberalization described above. In that sense, the local experience provides compelling proof of the political willingness of the national elite to reform the Peruvian state according to liberalizing goals, but also demonstrates how multiple socio-ecological reactions forced systematic adjustments in policies and procedures. In the case of Peru, the introduction of water neoliberalization was slightly later than in other neighboring countries (such as the early initiatives in the State of São Paulo, in Brazil in the 1980s, cf. Ioris, 2009) and was only possible after the general election won by Fujimori. Despite this delay of a few years, the initial focus of the reforms was on the reorganization of the water utility (SEDAPAL) to achieve higher rates of technical and managerial efficiency, which corresponds to the techno-environmental dimension of the analytical framework. Because of the critical condition of public services, the incoming Fujimori administration was initially forced to implement an emergency plan of water supply and infrastructure rehabilitation, which involved the construction of a number of small boreholes and storage tanks in low-income zones. Specific measures were taken to secure leakage reduction and some localized decontamination of the River Rímac (Rocha Felices, 1996).

Transnational actors also played a very important role in the transference of know-how and institutional strengthening (e.g. German program Proagua since 1996 and the World Bank's Water and Sanitation Program since 1995). In terms of service regulation, SUNASS was established in 1992 as a dedicated agency responsible for overseeing the separation between policy-making and utility management, as well as for operation benchmarking and the enforcement of more stringent water pricing mechanisms.

After those technical efforts to improve service performance and contain environmental degradation, the next main step was to incorporate SEDAPAL in the agenda of utility privatization that was then eagerly promoted by the Fujimori government. In two interviews (with former regulatory officers), it was mentioned that SUNASS was primarily established as a precondition for the privatization of SEDAPAL. Alcázar et al. (2000) further emphasize that privatization (in this case, a concession to private operators) first required a careful reshuffle of the water utility of Lima, such as the review of water tariffs (increased from US$ 0.17/m^3 in 1990 to US$ 0.41/m^3 in 1995), reduction in labor costs (between 1991-1992 the company lost 721 workers or 23% of the workforce) and structural investments (an increase in annual investments from US$ 26 million in 1990 to US$ 80 million in 1996; cf. SEDAPAL annual bulletins). Those adjustments benefited from a World Bank loan of US$ 600 million which was specifically aimed to guarantee the commercial viability and public image of the water utility in anticipation of the intended privatization.

In a decade when the management of water utilities was being rapidly transferred to the private sector (i.e. the centrality of the monetization dimension in the 1990s), worldwide interest was attracted by announcement of an intention to privatize SEDAPAL. In 1994, three consortiums formally expressed their intention to bid for the water services of Lima, namely Canal de Isabel II, Compagnie Generale des Eaux and Lyonnaise des Eaux. However, despite an apparently favorable international policy environment, the desired privatization of the water utility of Lima never happened. After various delays, the tender was postponed until after the re-election of Fujimori in 1995, then followed by further adjournments and, eventually, an official cancellation in 1997 (Alcázar et al., 2000).

Former managers and regulators of SEDAPAL were interviewed and asked searching questions about the reasons for the failure. The results of these enquiries suggest that the main problem faced by the Fujimori government was political because legitimization of utility privatization was then insufficient to overcome growing opposition by water users and civil society representatives. This question of legitimacy within the nation was more carefully addressed by García after 2006; see below. Ugarteche (1999) points out that the tensions arising from the 1990s neoliberal reforms were effectively an attack on the rights and achievements of the working class. The reforms raised opposition and, whenever possible (considering the authoritarianism of Fujimori), were resisted by the population. The public was particularly unhappy with the fact that privatization would have been followed by significantly higher tariffs which would be needed to attract investments required from the private sector.

With this temporary setback to privatizing SEDAPAL, the government undertook a large program of operational rationalization and introduction of economies of scale (cf. SEDAPAL, 1998). It is perhaps ironic that the administration of Fujimori, probably the most neoliberal government on the continent at that time, led a comprehensive program of investment in equipment, technology and construction (which corroborates the complexity and adaptability of water neoliberalism). Contracts estimated at around US$ 2.44 billion were let in Lima alone (which was the equivalent of 0.5% of the GDP of the entire 1990 decade; cf. SEDAPAL, 2005). Better management alleviated the water problems and further reduced the appetite for privatization within the nation. A set of mechanisms set in motion by the attempt to neoliberalize nature can sometimes "lead to events that, in turn, may modify or hinder the policies that brought about the initial change" (Castree, 2008b: 162). In other words, the pursuit of nature neoliberalization is not a linear process that can easily achieve all the outcomes initially planned, but implementation strategies are constantly reassessed and renegotiated by those in favor and against neoliberal goals.

Overall, the 1990s demonstrated an emphasis on techno-environmental adjustments and associated monetization initiatives (in the form of international loans and infrastructure works carried out by private companies) with less attention given to the legitimization of neoliberalizing policies. This neglect of achieving popular support inevitably compromised the prospects of the initially planned reforms and continued. Persistent problems were faced by some of those already connected to the public network and the lack of services in the newly-established *barriadas* of Lima further damaged the perception of reforms by the general public.

The Second Moment: Monetization and Legitimization

With the return of formal democracy in 2000, the maintenance of market-based reforms required a more convincing political justification and more effective responses to popular uneasiness. In the next decade (2001-2010), the neoliberalization of water in Lima took a more nuanced direction, with a stronger emphasis on the legitimization of reforms, but also on renewed attempts to involve private sector operators. There was a transition from techno-environmental and monetization policies in the 1990s into more vigorous monetization and legitimization efforts in the 2000s. Formal democratic rule required intensive efforts to justify the direction of water management reforms. Repeated advertisement campaigns were led by SUNASS and SEDAPAL, as well as by the newly-created Vice-Ministry of Construction and Sanitation (in 2002) and the National Water Authority (in 2008). A credible political message was necessary to persuade hundreds of residents' associations of the supposed advantages of neoliberal water reforms and to contain

the adverse criticism of environmental and social NGOs (such as Alternativa and CIDAP) and of the national federation of water utility workers (FENTAP).

The second phase of water neoliberalization in Lima started with the creation of new channels of interaction between the government and private service providers. International cooperation agencies (such as GTZ, CIDA, KFW, USAID, etc), governmental donors and multilateral banks (European Union, JICA, OAS, World Bank) intensified their efforts to assist neoliberalization of water in Peru, through the support of governmental and non-governmental projects alike, and the search for alternative forms of service provision.

A first experiment was the BOT (build-operate-transfer) contract for drinking water production over 27 years in the Chillón catchment (called project 'Agua Azul' [Blue Water]). The concession to an Italian operator was worth US$ 250 million and was intended to produce approximately 5% of Lima's water needs. This contract has been criticized for not favoring SEDAPAL. Only 35% of the water for which the private concessionaire will be paid will reach the water customers because of a lack of distribution systems on the part of the public utility (Author's interview with SEDAPAL manager, 20/04/09). Contacts with farmers in the Chillón catchment also identified a growing resentment towards the private company because of reduced flows caused by over-abstraction during the irrigation season:

> "In the summer, Agua Azul is a big problem for us, because now the water in the river often goes really low. (…) We have complained many times to SEDAPAL and to Agua Azul, but the company insists that they have a contract that allows them to operate this way. We have agreed on some points with the company, but they never maintain their word. I don't see any point in appealing to the government; it is a lost cause. It seems that the only option is to invest in water storage to cope with the summer. (…) In the end, many farmers are forced to sell their land and give up to the pressure for urban expansion [on green fields]" (Author's interview 17/04/09).

Despite such evident shortcomings of market-based solutions without effective environmental regulation, the incoming president Alan García saw clear opportunities in maintaining and expanding the modernization of the water industry in partnership with private operators. During his campaign in 2006, the phrase 'without water there is no democracy' was cleverly incorporated into García's election manifesto and, afterwards, used as a main slogan by the new government (Figure 2).

As an experienced politician, García evidently perceived the political advantages that could be derived from investments in the water infrastructure of the capital. At the same time, García recognized that it would require additional efforts in terms of political justification to ensure popular acceptance of the renewed privatization of water in Lima. For the business community, García seemed the 'ideal leader' to advance the agenda of the neoliberalization of water in Peru (Author's interview with NGO activist, 25/05/09). With García, the neoliberalization of water moved from a largely economic and technocratic perspective to a more subtle coordination between economic and political goals. The advance of water neoliberalization in Lima also benefited from weakening of political opposition and internal disputes between left wing, popular parties in the two previous decades (see Schönwälder, 2002). An unmistakable sign of the fragmentation of the workers' movement has been the collaborative attitude of the very union that directly represents the employees of SEDAPAL, called SUTESAL (confirmed in interviews with two directors of SUTESAL). A perverse consequence of this opportunistic collaboration of SUTESAL is the growing number of contracted-out workers, who receive lower salaries than regular SEDAPAL staff, no additional benefits and no safety equipment, according to interviews with contracted-out workers, May 2009.

Figure 2: 'Sin Agua no Hay Democracia' *[without water there is no democracy]*, also the main slogan of the program Water for All (APT)

In 2007, the program Water for All (APT) was launched by the new García government as one of the examples of "the Peruvian model of growth with social inclusion" (cf. Cornejo Ramírez, 2008). APT contained more than three hundred individual projects nationwide and 150 in Lima alone. This breakdown of the investment program greatly enhanced opportunities for foreign companies (particularly American, Brazilian, Chilean, and Spanish corporations) to be involved in the water services of Lima (León Suematsu, 2006).

A series of 'megaprojects' were incorporated in the APT portfolio, such as the construction of the Huachipa water treatment work and the expansion of the distribution system in the North Cone of Lima. Various PPPs were formalized to build a water transfer scheme from Huascacocha in the Andes (called project Marca IV), a desalination plant in the south of Lima (to be constructed by a new PPP water utility, 'Aguas del Sur de Lima'), and the sewage treatment plants of Taboada and La Chira. Table 2 has an overview of the initiatives included in the APT program in the form of concession contracts. To secure additional funds and send a message of strong commitment to neoliberal aspirations, SEDAPAL was listed on the stock market of Lima. A decree passed in June 2008, during the aforementioned 'Eighteenth Brumaire' of Alan García, authorized the water utility to negotiate at least 20% of its shares.

Table 2. Water and Wastewater Concession Contracts in Lima, 2008-2015

Projects	Total estimated cost (thousand US$)
New dams	480,000
New system for water treatment and distribution for North and South of Lima	787,000
Wastewater Treatment Plants	468,000
Rehabilitation of North water system	570,000
Total	2,305,000

Source: SEDAPAL (2007a)

The impact of multiple business transactions related to water through the implementation of the APT program, which had been made possible because of the stronger political legitimization secured by García, went much further than infrastructure projects and large business contracts, and eventually started to permeate the everyday public perception of water issues by the population. In my visits to the periphery of Lima, it was possible to verify that intensive monetization of water management has affected interpersonal relations even at the most local levels. Interviews with resident leaders showed acute resentment towards the large sums of money being invested in the central areas, whilst still leaving behind the more marginalized neighborhoods.

Nonetheless, despite such uneasiness over such inequity among the leadership, the aggressive advertising campaigns by the government – basically proclaiming that the solution to the water problems of Lima is looming – had major consequences in terms of undermining community cohesion, as mentioned by a resident of Villa El Salvador:

> "There is a very clear reduction in community mobilization, we don't have the same willingness to protest and participate in meetings than before. We see some investments in water from time to time here in our area, and I think that it was enough to 'kill' community collaboration. Despite the fact that we don't always have a good dialogue with the authorities, I see less interest and more distrust in my community. (…) Water does not have the same appeal as before when we started Villa El Salvador (Author's interview, 24/04/09).

It was quite remarkable that some of the poorest areas of Lima, such as Pachacútec, have become the testing ground for micro-credit schemes (i.e. a form of micro-monetization), described as the 'new paradigm' of sanitation in Peru (Baskovic, 2008). The experiment involved the creation of so-called 'small sanitation markets' and was sponsored by NGOs, government and international agencies (Figure 3). Local shops were encouraged to sell sanitation equipment and toilet units to the residents, making use of financial assistance provided by five intervening banks. Credit was simplified because property deeds were not required, but only proof of employment and some evidence of property tenure (*constancia de posición*). Although on paper it may have seemed an interesting idea, in practice the promotion of the micro-credit by international agencies met with skepticism from the locals. During fieldwork in Pachacútec, it became clear that the project was struggling to make progress; for example, it started with 21 promoters and after a year of activity had only five surviving agents. In three interviews (05/05/09), local residents complained that the equipment and the technology were not appropriate to their wooden houses and, ultimately, only the better off in the community could really benefit from the micro-credit conditions.

Figure 3: Local Sanitation Markets: The 'new water paradigm'
(translated from Baskovic, 2008)

ACHIEVEMENTS, RISKS AND CONTRADICTIONS OF WATER NEOLIBERALIZATION IN LIMA

This section assesses the results of the reconfiguration of the water industry of Lima in the last two decades in the light of the analytical framework described above. The preceding pages demonstrated that the neoliberalization of water services since 1990 has been a staged combination of three complementary dimensions – technical, economic and political – which have been carefully orchestrated in order to create a favorable business atmosphere and transfer part of the responsibility for public services to the private sector. Yet, the same analysis suggests also patchy achievements and widespread insufficiencies in the neoliberalization of water. While technical solutions have failed to prevent degradation of surface and ground water reserves, the involvement of private operators has been erratic and dependent on public funds and higher tariffs. Between 2001 and 2010, water production increased 3.1% in Lima, while during the same period the tariffs were adjusted upwards by 53.8% (based on MVCS, 2011). Lima is now a city where money circulates through household water tariffs (US$ 350 million in 2008, cf. SEDAPAL annual reports), local water vendors (still hundreds of water trucks in operation) and the contracts with private concessionaries. There are persistent management problems and uncertainties about the future of its water industry.

A main drawback – mentioned in several of interviews with activists and policy-makers – is the fact that the technocratic attitudes of SEDAPAL, in its association with international construction companies, have undermined any chance of advancing other low-cost alternatives which might be based on more active involvement of local residents. Likewise, the investments that took place both in the 1990s and in the 2000s focused on expansion of physical infrastructure rather than on quality and affordability of the service.

There have been two main moments of substantial investments in SEDAPAL (illustrated in Figure 4), one in the middle 1990s, which were mainly dedicated to pipeline rehabilitation and capturing additional sources of raw water, and another, since 2005, which has been focused on the expansion of primary and secondary pipelines. A significant part of

these investments is intended to be recovered in the future by raising customer tariffs. Already there has been an increase in water charges of 43.8% between July 2006 and December 2008 (Author's interview 22/05/09). Even before the conclusion of APT projects, SUNASS had approved increases in domestic water charges equivalent to the construction cost of several initiatives (i.e. 10.37% for Marca II, Huachipa, Ramal Norte and Ramal Sur, and 12.31% for the Taboada sewage treatment plant and a submarine sewage pipeline). One key problem is that such an approach has essentially locked-in the current framework of public-private alliances, given that the investors will obviously expect to see the return of their investments coming from water tariffs in the future.

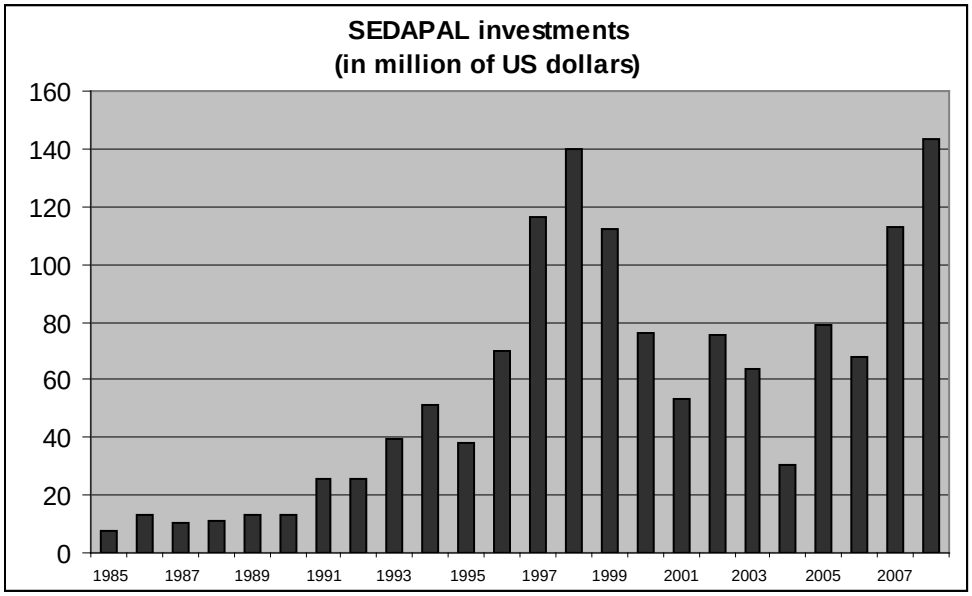

Figure 4: Total investments in SEDAPAL in millions of American dollars, according to total annual investments and annualized exchange rates
(Data sources: SEDAPAL, INEI and BCRP)

Systematic increases in water tariffs since 1995 may have enhanced the cost-recovery capacity and financial health of the utility, but have not improved the relationship between SEDAPAL and the population of Lima (ADERASA, 2007). On the contrary, as was pointed out in an interview with a community leader, "SEDAPAL can only really communicate with the population via the water bill" (such observation about the overall attitude of the water utility was corroborated, in confidence, by middle-rank managers).

Despite the systematic promotion of the advantages of modern water services in the mass media, many residents resent their difficulties in communicating with official agencies. Those problems of communication often result in protests which are, nonetheless, mostly ineffective (see Gandolfo, 2009). The main targets of the APT program, such as Pachacútec, suffer from regular delays and discontentment, with the population constantly having to battle to obtain information about the pace and scope of construction works. In addition, one interviewee (an officer of the regulatory agency) mentioned that construction objectives are frequently manipulated by the government in an attempt to maximize the impact of APT. As pointed out by a former SEDAPAL employee, who was very critical of the policies adopted by the water utility in recent years:

> "APT has a very strong [political] purpose; it is even stronger than the projects implemented by Fujimori. In the 1990s, we did good work with some local

> communities, particularly in relation to the alternative water supply solutions, called 'progressive systems' [based on a water storage tanks and community coordination], but now the APT activities only serve the demands of APRA [the president's party]… that gives no change to other options and it is a missed opportunity to really engage with the public in the solution of water problems" (Author's interview 07/05/09).

The tension between the utility and its clients is manifested through an escalation in cases of vandalism and water meter theft, which increased from 32,256 to 85,176 between 2000 and 2007 whilst the rate of metering only increased from 62.8% to 70.1% in the same period (cf. SEDAPAL annual bulletins). Most of the cases of vandalism happen in low income areas, which suggest a spontaneous reaction against the attempt of the water utility to closely monitor water usage: in 2007, 23.3% of the cases took place in Comas and 21.8% in Villa El Salvador (SEDAPAL, 2007b).

The neoliberalization of the water sector of Lima has also been marred by repeated evidences of corruption. For example, in July 2009, a cabinet minister was involved in a scandal concerning the cancellation of a contract for the construction of the abovementioned Taboada treatment plant and was accused of taking bribes (apparently involving US$ 1 million) from the private companies (El Comercio, 2009). A few months later, León Suematsu, then president of SEDAPAL and also Vice-Minister of Construction and Sanitation, was forced to resign because of serious allegations of corruption in the construction of a new water treatment plant, which involved members of his family, politicians and private contractors (El Comercio, 2010).

In addition, water service problems have been further aggravated by the persistent expansion of the capital city over hilly areas and river valleys, where the provision of public services is even more challenging and more expensive (see Figure 5).

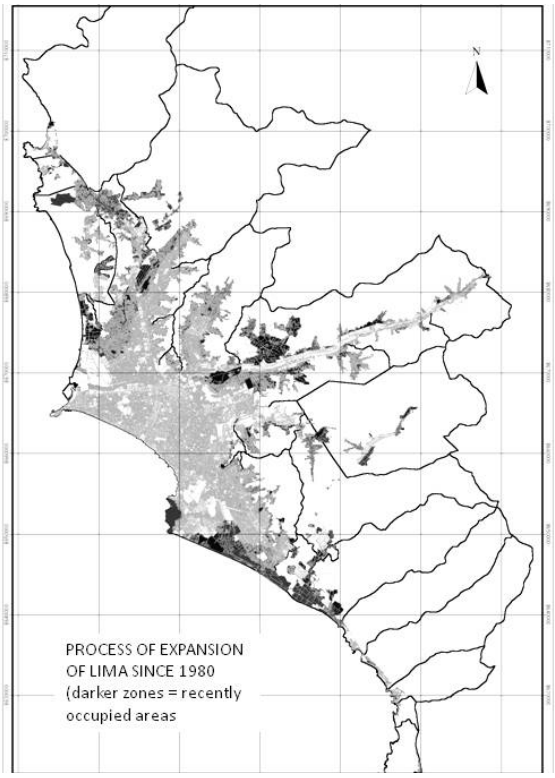

Figure 5: Continuous expansion of Lima since 1980 [darker areas represent new settlements] Image provided by Alternativa (Centro de Investigación Social y Educación Popular)

Substantial sums have been invested in the augmentation of the pipeline infrastructure and operational adjustments have attracted more international contractors than SEDAPAL can actually manage, yet much less attention has been dedicated towards increasing the long-term resilience of the metropolitan water services. This has been a common condemnation not only among grassroots campaigners, but also among those groups that advocate more conventional neoliberalization. The manager of a multilateral project emphasized his frustration with what he saw as the slow pace of the institutional reforms in Peru. This person claimed that international agencies would prefer stricter market policies and utility privatization (Author's interview 17/03/09). The fundamental criticism is that, in spite of significant works under construction, the bulk of the investments continue to rely on the general taxation (i.e. the national treasury). In other words, there exists a clear uneasiness among more orthodox neoliberals, such as those in multilateral agencies, with the fact that the expansion of the water infrastructure in Lima was mainly being financed by the government rather than by those who directly benefit from the investments (i.e. the customers of SEDAPAL). These same critics point out that it is not clear whether in the end, the APT program will have sufficient resources to fulfill all its ambitious targets, particularly in light of international financial instability since 2008 (Author's interview 11/03/09).

A sizeable part of government funds comes from international loans, but the willingness and ability to contract loans vary between administrations, which is seen as a barrier for long-term planning. The performance of the regulatory agency (SUNASS) is also considered to be one of the central problems of the reform in the water sector, because of the lack of legal instruments and sustained political interferences (ACDI, 2001). As mentioned by a water regulator:

> "We have today a situation of too many investments in the water sector of Lima, there is a huge space for business, we are open for business. The problem is how to manage all those simultaneous activities and, more important, what will happen after this phase. SUNASS [the regulatory agency] has less authority and autonomy than before, so we can't really do much about that" (Author's interview, 03/05/09).

In the end, in spite of the busy agenda of water reforms in the last two decades, the organization and performance of the water services of Lima remain highly unreliable and its future is fraught with uncertainty. The water sector has become entrapped in a vicious circle of social exclusion, passive governmental responses and fresh opportunities for a new round of demagogy and populism. Because of a single-minded focus on supply augmentation, there has been limited attention to the management of water demand (something that has obviously much less electoral visibility). The emphasis on pipeline infrastructure and the failure to address the unsustainability of water reserves was condemned by SEDAPAL's former president Carlos Silvestri as a future with "less water for all" (BBC, 2007).

The hectic schedule of institutional reforms and infrastructure investments has been implemented against a background of spatial and sociopolitical inequalities that have characterized the urban development of Lima for the last decades. Such patterns have been maintained and even reinforced under water neoliberalization, which has offered only short-term answers to the challenging water problems of the capital and, in the end, has mostly benefited the same business groups and elite members that had profited historically from state-led interventions. The ambiguity about the present and the future of water services, in a context of increasing neoliberalization of water, was captured in a publication by FENTAP at the time of this research (Figure 6).

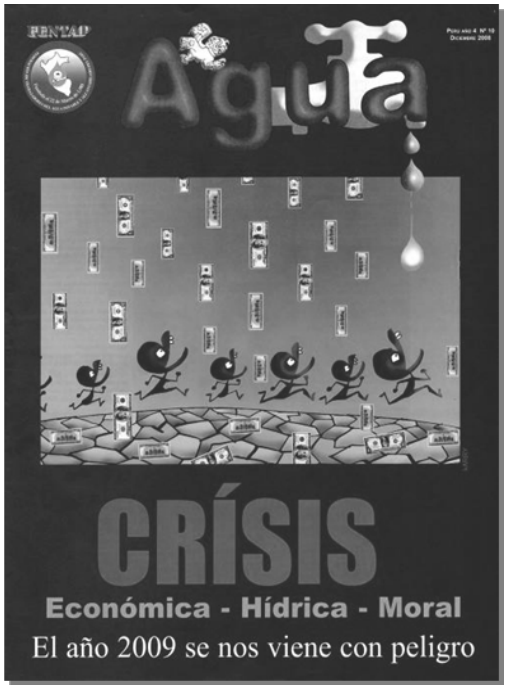

Figure 6 – FENTAP Publication about the Growing Problems in the Water Sector
["Crisis: Economic – Hydrological – Moral: The Year 2009 Comes with Danger]

CONCLUSIONS

The complexity and challenges for reforming Lima's water sector illustrate a non-linear evolution of the neoliberalization of water and the multifaceted synergies between socio-ecological and politico-economic processes. A conceptual framework has been introduced to address this socio-natural complexity by, providing a more comprehensive explanation of the interplay between different dimensions of water neoliberalization. Rather than depicting water neoliberalization as an ideal process, the framework suggested here accounts for the advance of neoliberalism over water systems as the contingent outcome of techno-environmental improvements, monetization of water services and a search for political legitimacy. These three dimensions are inherent in local, national and international experiences of the neoliberalization of water, although manifest in different ways according to specific demands, pressures and opportunities.

The first decade of water neoliberalization in Lima was focused on technical and economic goals, because of the precarious condition of water services in the early 1990s and the attempt by Fujimori to reinsert the country in the globalized economy via, among other strategies, the privatization of public utilities. However, because of the questionable legitimacy of this semi-dictatorial regime, the government was forced to postpone the desired divestiture of SEDAPAL, while sustaining the flow of investments in water infrastructure. After an interim transition under Toledo, which maintained the direction of the reforms, the election of Alan García paved the road for the return of an aggressive neoliberalization of water in Lima, but this time with more careful efforts to achieve political legitimization of the monetizing strategies (e.g. concession to private operators and higher water tariffs).

In contrast to other South American countries, water neoliberalization in Lima and in Peru continued to expand and increasingly attract private investors and construction companies. The introduction of the program Water for All (APT) was instrumental in consolidating several new business opportunities, although always justified by a discourse of social sensibility and universal services encapsulated in the slogan 'Water for All'). Despite

institutional reforms and several infrastructure initiatives, water services of Lima reinforce marked social inequalities, with superior services provided to central areas contrasting with inadequate services provided for settlements in the periphery. There are serious uncertainties about the future availability of resources because of environmental degradation and the long-term provision of services because of reliance on foreign funds and private sector expertise.

Notwithstanding those manifest deficiencies, the imposition of the neoliberal agenda over the water industry of Lima has so far avoided the emergence of more systematic opposition and criticism. Political containment derives in part from the temporary, localized improvements in water services and partially because of ideological pressures which are daily reinforced by the mass media allied to the government that help to disorganize protest groups and resident associations. In any event, challenges and confrontation are likely to increase due to the probable failure of the neoliberalization of water in Lima. For instance, the continuous increase in the water tariffs, needed to maintain involvement of private companies and to service the international loans, constitutes a growing area of contestation. The election of a nationalist president in the 2011 (Ollanta Humala, a former army officer) may lead to some change of policies and a reduced emphasis on neoliberal solutions, although the influence of the hegemonic politico-economic model is likely to last, perhaps even in more subtle and disguised ways. Water management in Lima, and throughout Latin America for that matter, remains a highly politicized topic, exactly because the demands and rights of the large majority of the low-income population continue to be systematically frustrated by the narrow, discriminatory priorities of neoliberal public policies.

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